

N61165.AR.003750  
CNC CHARLESTON  
5090.3a

ASBESTOS-CONTAINING MATERIAL RE-INSPECTION FOR BUILDING 36 VOLUME 8 CNC  
CHARLESTON SC  
2/15/2000  
BAT ASSOCIATES, INC.

---

**Volume 8**

**Asbestos-Containing Material Re-inspection  
For Building 36  
Charleston Naval Shipyard  
Charleston, South Carolina**

Contract No. N2467-96-D-0998  
Delivery Order No. 0013

*Prepared for:*

Department of the Navy  
Southern Division  
NAVFACENGCOM  
2305 Eagle Drive  
North Charleston, SC 29419

---

*Prepared by:*

BAT Associates, Inc.  
5151 Brook Hollow Parkway  
Suite 250  
Norcross, Georgia 30071  
(770) 242-3908

February 15, 2000

**APPENDIX A**

**SAMPLE AND ACM LOCATION DRAWINGS**

**APPENDIX B**

**PHOTOGRAPHIC DOCUMENTATION  
OF IDENTIFIED ACM**

**APPENDIX C**

**PERSONNEL AND LABORATORY ACCREDITATIONS**

**APPENDIX D**

**LABORATORY ANALYSIS RESULTS**

---

**Volume 8**

**Asbestos-Containing Material Re-inspection  
For Building 36  
Charleston Naval Shipyard  
Charleston, South Carolina**

Contract No. N2467-96-D-0998  
Delivery Order No. 0013

*Prepared for:*

Department of the Navy  
Southern Division  
NAVFACENGCOM  
2305 Eagle Drive  
North Charleston, SC 29419

---

*Prepared by:*

BAT Associates, Inc.  
5151 Brook Hollow Parkway  
Suite 250  
Norcross, Georgia 30071  
(770) 242-3908

February 15, 2000

## TABLE OF CONTENTS

		<b><u>Page</u></b>
1.0	Executive Summary	1
2.0	Building Inspection Information Form	3
3.0	Introduction	4
4.0	Sampling Methodology	5
5.0	Asbestos Inventory and Assessment	8
6.0	Summary of Sample Analysis Results	9
7.0	Results of Quality Control Sampling	10
8.0	Physical Assessment of Identified ACM	11
9.0	Hazard Assessment of Identified ACM	22
10.0	Preliminary Cost Estimate for Removal of Identified ACM	31
11.0	Conclusions	32

## Appendices

Appendix A	Sample and ACM Location Drawings
Appendix B	Photographic Documentation of Identified ACM
Appendix C	Personnel and Laboratory Accreditations
Appendix D	Laboratory Analysis Results

## List of Tables and Figures

Table 1.0	Summary of Identified ACM	1
Table 2.0	Recommended Response Actions	2
Table 3.0	Summary of Identified Suspect ACM	8
Table 4.0	Summary of Sample Analysis Results	9
Table 5.0	Validation of Quality Control Sampling	10
Figure 1.0	Decision Tree Diagram For Hazard Assessment	23



## 1.0 EXECUTIVE SUMMARY

BAT Associates, Inc. (BAT) was retained by the U.S. Department of the Navy, Southern Division (SouthDiv), Naval Facilities Engineering Command (NAVFACENGCOM) to perform an asbestos-containing material (ACM) re-inspection of Building 36 located at the Charleston Naval Shipyard (CNS) in Charleston, South Carolina.

A list of ACM identified in Building 36 is summarized in Table 1.0.

**Table 1.0**  
**Summary of Identified ACM**

HA No.	Material Description	Sample Analysis Results	Approx. Quantity of ACM	NESHAP Category
1	Floor Tile, 9" x 9" black w/ black mastic	Tile = 7% chrysotile, Mastic = 2% chrysotile	14,000 SF	Category I, non-friable
3	Floor Tile, 12" x 12" off-white with brown streaks w/ black mastic	Tile = 10% chrysotile, Mastic = 1-2% chrysotile	7,000 SF	Category I, non-friable
4	Floor Tile, 12" x 12" beige with gray speckles w/ black mastic	Tile = 3% chrysotile, Mastic = 5% chrysotile	7,240 SF	Category I, non-friable
5	Floor Tile, 12" x 12" lime green with white streaks w/ black mastic	Tile = 5% chrysotile, Mastic = 10% chrysotile	7,000 SF	Category I, non-friable
13	Pipe Fitting Insulation, 3" white with canvas wrap on steam	15-20% chrysotile, 15-20% amosite	300 EA	Regulated, friable
14	Pipe Fitting Insulation, 3" with canvas wrap on domestic water	Assumed to contain asbestos due to inaccessibility of the material in walls	375 EA	Regulated, friable
17	Pipe Insulation, 12" with metal wrap	Layer 1 = 15% amosite, Layer 2 = NAD	160 LF	Regulated, friable

**NOTES:** HA = Homogeneous Area SF = Square Feet LF = Linear Feet  
EA = Each

- One percent or less asbestos content is considered a non-asbestos-containing material by EPA and the State of South Carolina.
- Federal and state regulations require a minimum of three non-asbestos-containing analysis results per homogeneous area (material) to classify that material as being a non-asbestos-containing material. However, one "positive" asbestos-containing analysis result would classify that material as being an asbestos-containing material.
- No Quality Control discrepancies were noted.

BAT recommends the following management actions for the identified ACM in Building 36 in Table 2.0.

**Table 2.0**  
**Recommended Response Actions**

<b>HA No.</b>	<b>Material Description</b>	<b>Recommended Response Action</b>
1	Floor Tile, 9" x 9" black w/ black mastic	Remove prior to renovation or demolition
3	Floor Tile, 12" x 12" off-white with brown streaks w/ black mastic	Remove prior to renovation or demolition
4	Floor Tile, 12" x 12" beige with gray speckles w/ black mastic	Remove prior to renovation or demolition
5	Floor Tile, 12" x 12" lime green with white streaks w/ black mastic	Remove prior to renovation or demolition
13	Pipe Fitting Insulation, 3" white with canvas wrap on steam	Remove prior to renovation or demolition
14	Pipe Fitting Insulation, 3" with canvas wrap on domestic water	Remove prior to renovation or demolition
17	Pipe Insulation, 12" with metal wrap	Remove prior to renovation or demolition

Other suspect ACM not identified could be present in areas of the building inaccessible to the asbestos building inspectors. For example, materials could exist in walls and other locations where access could only be gained by demolition of the building. Also, other materials currently not recognized by the asbestos building inspection industry could exist.

The total estimated cost for the removal of the identified and/or assumed ACM in Building 36 is approximately \$130,100. See Section 10.0 for a break down of the preliminary cost estimate for the removal of the identified or assumed ACM.

## 2.0 BUILDING INSPECTION INFORMATION FORM

**Building Name:** Barracks

**Building Number:** 36

**Facility:** Charleston Naval Shipyard

**Building Area (square footage):** 35,880

**Year Built:** 1959

**Building Type:** Living Quarters

**No. of Floors in Building:** Three

**Purpose of ACM Survey:** Re-Inspection

**Facility Unit Identification Code (UIC):** N/A

---

---

**Building Contact:** Mr. Matthew Humphrey

**Contact's Telephone No.:** (843) 743-9985

**Building Survey Date(s):** November 26, 1999 and January 28, 2000

---

---

**Asbestos Inspector's Name:** Mr. Jason McGlashan, and Mr. Foshie Bell

**Asbestos Inspector's Accreditation No:** GA2900

**Inspection Company:** BAT Associates, Inc.

**Company Telephone No.** (770) 242-3908

---

---

### 3.0 INTRODUCTION

BAT Associates, Inc. (BAT) was retained by the U.S. Department of the Navy, Southern Division (SouthDiv), Naval Facilities Engineering Command (NAVFACENGCOM) to perform an asbestos-containing material (ACM) re-inspection of all buildings located at the Charleston Naval Shipyard in Charleston, South Carolina. The purpose of this re-inspection was to:

1. Perform a comprehensive ACM re-inspection of 34 buildings in accordance with Federal and U.S. Navy requirements;
2. Assess the condition of previously identified friable and non-friable ACM; and
3. Provide a preliminary cost estimate for the removal of identified ACM.

The re-inspection was performed in accordance with the Navy's Asbestos Facility Inventory/Assessment Protocol (NEESA 70.2-010) and the U.S. Environmental Protection Agency's (USEPA) Asbestos Hazard Emergency Response Act (AHERA) and the Asbestos School Hazard Abatement Reauthorization Act (ASHARA).

The results of the re-inspection survey are presented in 24 separate volume reports. This report describes the results for Building 36.

This re-inspection survey was performed by Mr. Jason McGlashan and Mr. Foshie Bell, under the direct supervision of Mr. Douglas J. Milton, CIH, on November 26, 1999 and January 28, 2000. Mr. McGlashan is an accredited building inspector. Mr. Bell is an accredited asbestos building inspector and management planner. Mr. Milton, a Certified Industrial Hygienist, is an accredited asbestos inspector, management planner, and project designer.

This report discusses the sampling methodology used during the re-inspection and assessment (Section 4.0); a list of all identified suspect materials (Section 5.0); a summary of the bulk sample analysis results (Section 6.0); results of quality control sampling; (Section 7.0); physical assessments of the identified ACM (Section 8.0); a hazard assessment of the identified ACM (Section 9.0); preliminary cost estimates for removal (Section 10.0); and conclusions (Section 11.0). Appendix A contains drawings identifying the location of collected bulk samples and the locations of identified ACM. Appendix B contains photographic documentation of identified ACM. Appendix C contains personnel and laboratory accreditations. Appendix D contains laboratory analysis results.

The assessment protocol for ACM involved three distinct steps:

1. Performed preliminary walk-through of the building to identify suspect ACM and to determine the amount of suspect ACM, to define the number of samples to be collected, to identify access problems (e.g., collection of samples in a limited access pipe chase below the building), and to determine the degree of personal protection necessary for the bulk sample collection.

2. Visually inspected the building for ACM to identify the location of the suspect ACM and to determine if the material was friable or non-friable. Suspect materials were then categorized according to the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for asbestos as: Category I non-friable materials, Category II non-friable materials, and Regulated (friable) Asbestos-Containing Materials (RACM).
3. Collected bulk samples for the analysis for asbestos content (see Section 4.0, *Sampling Methodology*, for details).

#### 4.0 SAMPLE METHODOLOGY

Representative, randomly selected bulk samples were collected in accordance with the Navy's and AHERA sampling protocol, as described in 40 CFR 363.36, and in accordance with BAT's contract requirements. Bulk samples were collected from homogenous areas (materials) in a manner that minimized any release of airborne asbestos fibers. A homogeneous area (material) is defined as a material uniform in size, color and texture.

The minimum number of samples collected from each homogeneous area was as follows:

1. *Friable Spray-Applied or Trowel-Applied Material* (including plaster)
  - a. Less than or equal to 1,000 Square Feet (S.F.) = 3 samples
  - b. Greater than 1,000 S.F. and less than or equal to 5,000 S.F. = 5 samples
  - c. Greater than 5,000 = 7 samples
2. *Pipe and Duct Insulation*
  - a. Three samples per homogeneous area of insulation.
3. *Elbows, Valves, Fittings, and Connection Mud*

Three representative samples from each type of insulated elbow, valve, fitting, and connection mud.
4. *Boiler, Tanks, and Furnaces*

A minimum of 3 samples per unit.
5. *Patchwork*

Patchwork is defined as a patch or repair to existing material based on the following quantities:

- a. Surfacing material patches are limited to a maximum of 6 S.F.
- b. Pipe and duct insulation patches are limited to a maximum of 6 Linear Feet (L.F.) or 6 S.F.
- c. Boiler, tank, and furnace patches are limited to 6 S.F.

If the patchwork exceeded the limits prescribed above, it was sampled according to the homogeneous area protocol in items 1 to 4 above. If a material qualifies as patchwork, a single sample was collected per patch.

6. *Ceiling or Acoustical Tile*

3 samples

7. *Miscellaneous Friable Material*

3 samples

8. *Non-Friable Material*

Non-friable materials for purpose of this survey included Transite-type panels, floor tiles, floor tile mastic, and other miscellaneous materials.

Minimum of 3 samples.

The procedures followed for collection of each bulk sample is outlined briefly below:

1. The accredited inspector collecting the sample was equipped with the appropriate personal protective equipment. This included a half-mask air-purifying respirator, protective gloves and protective eyewear.
2. The surface of the material being sampled was wetted with amended water (containing a surfactant to aid penetration) mist to lessen the risk of fiber release during sampling.
3. Each sample was extracted using the appropriate equipment, (e.g., a sample container, knife, core borer). Care was taken to insure that all layers of the suspect materials, down to the substrate, were included in the sample.
4. Each sample was placed in an individual container, which was then sealed and labeled with a unique identification number which was also recorded on the sample data log-in sheet.

5. After each sample was collected, the area immediately surrounding the sampling location was inspected for debris and wet-cleaned as necessary to lessen the risk of an airborne fiber release.
6. All necessary data were recorded on the BAT Suspect Material Inventory Form including sample number, sample location, type of suspect material, name of inspector collecting the sample and other relevant information.
7. Samples were then transported to Cape Environmental Management Inc. (CAPE) Asbestos Laboratories in Atlanta, Georgia, for Polarized Light Microscopy (PLM) analysis. The CAPE Asbestos Laboratory participates in the National Voluntary Laboratory Assurance Program (NVLAP) for the analysis of asbestos content in suspect materials. CAPE's NVLAP Laboratory Code is 102111-0.
8. BAT collected duplicate samples during the collection of primary bulk sampling for quality control (QC) purposes. QC samples were collected at ten percent of the bulk sample locations. They were assigned unrelated sample identification numbers and analyzed by Analytical Environmental Services, Inc. (AES). AES participates in the National Voluntary Laboratory Assurance Program (NVLAP) for the analysis of asbestos content in suspect materials. AES's NVLAP Laboratory Code is 102033-0.
9. Upon receipt by the laboratory, the samples were logged in and assigned a unique laboratory identification number. The laboratory analyzed the samples in accordance with 40 CFR 363.87 subpart F. Copies of the laboratory accreditations for both laboratories may be found in Appendix C.

## 5.0 ASBESTOS INVENTORY AND ASSESSMENT

Table 3.0 describes the suspect ACM identified in and around Building 36.

**Table 3.0**  
**Summary of Identified Suspect ACM**

HA No.	Description of Suspect ACM	Location of Suspect ACM	AHERA Category of Material
1	Floor Tile, 9" x 9" black w/ black mastic	First floor, throughout (under HA # 4 and 5; second floor, throughout (under HA #3)	Misc.
2	Floor Tile, 9" x 9" dark blue with white streaks w/ black mastic	First floor, day room	N/A
3	Floor Tile, 12" x 12" off-white with brown streaks w/ black mastic	Second floor, throughout (over HA # 1)	Misc.
4	Floor Tile, 12" x 12" beige with gray speckles w/ black mastic	First floor, main lobby (aver HA # 1); third floor, throughout	Misc.
5	Floor Tile, 12" x 12" lime green with white streaks w/ black mastic	First floor, rooms and corridors (over HA # 1)	Misc.
6	Drywall, on walls	Throughout the building	N/A
7	Joint sealer Compound, on drywall	Throughout the building	N/A
8	Ceiling Tile, 2' x 2' white suspended groove and pinhole (new)	Second floor, center corridor	N/A
9	Ceiling Tile, 2' x 4' white suspended groove and pinhole (old)	Third floor, center corridor	N/A
10	Ceiling Tile, 2' x 4' white suspended groove and pinhole (new)	Third floor, center corridor	N/A
11	Mastic on Sink, black	Second floor, writing room	N/A
12	Window Glazing, interior	All interior windows	N/A
13	Pipe Fitting Insulation, 3" white with canvas wrap on steam	Piping on all wall mounted radiators	TSI
14	Pipe Fitting Insulation, 3" with canvas wrap on domestic water	All floors, in walls behind all water fixtures	TSI
15	Roofing, built-up	Roof	N/A
17	Pipe Insulation, 12" with metal wrap	In crawl space and between Buildings 36 and 37	TSI
18	Tank Insulation	In exterior mechanical room	N/A

**Notes:** Misc. = Miscellaneous Material      N/A = Not Applicable

## 6.0 SUMMARY OF SAMPLE ANALYSIS RESULTS

Table 4.0 contains a summary of the bulk sample analysis results for suspect ACM identified in this building. Sample identification numbers do not necessarily match the building number since barracks 31, 32, 33, 34, 35, and 36 are of similar construction, have the same square footage, and the same construction date and were inspected as one unit.



All thermal system insulation (TSI), if present, was classified as friable material. As long as the outer covering remains intact and is in good condition the TSI can be considered non-friable (29 CFR 363.85). Ceiling tile, if asbestos is present was considered a friable material. However, if non-friable materials are drilled, sawed, ground or otherwise physically or mechanically disturbed, they may release asbestos fibers to the environment and therefore would be considered a friable material.

According to AHERA protocol, all samples within a homogeneous area must have an asbestos content of one percent or less by weight using Polarized Light Microscopy (PLM) analysis before the material can be categorized as non-asbestos-containing. If one sample is determined as asbestos-containing using PLM analysis, the entire homogeneous area must be classified asbestos-containing.

**Table 4.0**  
**Summary of Sample Analysis Results**

HA No.	Sample ID No.	Suspect Material Description	Asbestos Content	Friability
1	31-5-1	Floor Tile, 9" x 9" black w/ black mastic	Tile = 7% chrysotile, Mastic = 2% chrysotile	Friable
2	32-2-1, 32-2-2, 32-2-3	Floor Tile, 9" x 9" dark blue with white streaks w/ black mastic	Tile = NAD, Mastic = NAD	N/A
3	31-2-1	Floor Tile, 12" x 12" off-white with brown streaks w/ black mastic	Tile = 10% chrysotile, Mastic = 1-2% chrysotile	Friable
4	36-4-1	Floor Tile, 12" x 12" beige with gray speckles w/ black mastic	Tile = 3% chrysotile, Mastic = 5% chrysotile	Friable
5	36-5-1	Floor Tile, 12" x 12" lime green with white streaks w/ black mastic	Tile = 5% chrysotile, Mastic = 10% chrysotile	Friable
6	31-10-1, 31-10-2, 31-10-3	Drywall, on walls	NAD	N/A
7	31-11-1, 31-11-2, 31-11-3	Joint sealer Compound, on drywall	NAD	N/A
8	34-19-1, 34-19-2, 34-19-3	Ceiling Tile, 2' x 2' white suspended groove and pinhole (new)	NAD	N/A
9	31-6-1, 31-6-2, 31-6-3	Ceiling Tile, 2' x 4' white suspended groove and pinhole (old)	NAD	N/A
10	31-7-1, 31-7-2, 31-7-3	Ceiling Tile, 2' x 4' white suspended groove and pinhole (new)	NAD	N/A
11	36-3-1, 36-3-2, 36-3-3	Mastic on Sink, black	NAD	N/A
12	36-4-1, 36-4-2, 36-4-3	Window Glazing, interior	NAD	N/A
13	33-3-1, 33-3-2, 33-3-3	Pipe Fitting Insulation, 3" white with canvas wrap on steam	15-20% chrysotile, 15-20% chrysotile	Friable
14	Assumed	Pipe Fitting Insulation, 3" with canvas wrap on domestic water	Assumed to contain asbestos due to inaccessibility of material in walls	Friable
15	36-15-1, 36-15-2, 36-15-3	Roofing, built-up	NAD	N/A

HA No.	Sample ID No.	Suspect Material Description	Asbestos Content	Friability
17	Exterior Pipe-32	Pipe Insulation, 12" with metal wrap	Layer 1 = 155 amosite, Layer 2 = NAD	Friable
18	B36-S1, B36-S2, B36-S3	Tank Insulation	NAD	N/A

**Notes:** NAD = No Asbestos Detected N/A = Not Applicable

## 7.0 RESULTS OF QUALITY CONTROL SAMPLING

The purpose of quality control (QC) sampling was to ensure reproducibility of the primary laboratory analysis results. Duplicate samples were collected for ten percent of the total building samples for QC purposes.

**Table 5.0**  
**Validation of Quality Control Sampling**

Sample I.D. No.	Primary Laboratory Analysis Results	QC Laboratory Analysis Results
36-4-1QC	Tile = 3% chrysotile, Mastic = 5% chrysotile	Tile = 7% chrysotile, Mastic = 3% chrysotile

No discrepancies between primary laboratory and quality control laboratory bulk sample analysis were noted.

## 8.0 PHYSICAL ASSESSMENT OF IDENTIFIED ACM

The following sections contain a summary of the methodology BAT specialists used to conduct the physical assessment for this building. This methodology was developed in accordance with USEPA AHERA re-inspection requirements contained in 40 CFR Part 363.85.

### 1. Physical Assessment for Friable ACM.

A. **Condition.** Friable ACM were assigned to one of the following categories based on a visual inspection and touch test:

- 1) **Significantly Damaged Condition.** Material which met one or both of the following characteristics:
  - a. Ten percent (10%) or more of the material in the functional space is crumbled, blistered, or is hanging from the surface, deteriorated, showing adhesive failure, water stained, gouged or marred, and the damage is evenly distributed.
  - b. Twenty-five percent (25%) or more of the material in the functional space is crumbled, blistered, or is hanging from the surface, deteriorated, showing adhesive failure, water stained, gouged or marred, and the damage is localized.
- 2) **Damaged Condition.** Material which met one or both of the following characteristics:
  - a. The surface is crumbling, blistered, water stained, gouged or marred, or otherwise damaged on less than ten percent (10%) of the material in the functional space (but material is too damaged to be characterized as good condition) and the damage is evenly distributed.
  - a. The surface is crumbling, blistered, water stained, gouged or marred, or otherwise damaged on twenty-five percent (25%) or more of the material in the functional space (but material is too damaged to be characterized as good condition) and the damage is localized.
- 3) **Good Condition.** Material with very limited, or no visible damage or deterioration.

B. **Potential for Disturbance.** Friable ACM were assigned to one of the following categories based on a visual inspection and assessment of surroundings:

- 1) **Potential for Significant Damage.** Material which met one or more of the following conditions:
  - a. High potential for Contact. Service workers are in the vicinity of the material more than once each week or the material is in a public area and is accessible to building occupants.
  - b. High Potential for Vibration. Loud motors or engines present in the vicinity of the material or there are intrusive noises or easily sensed vibrations from surrounding area, such as nearby highways or airports.
  - c. High Potential for Air Erosion. High velocity air moving across or against material.
- 2) **Potential for Damage.** Material which met one or more of the following conditions for potential for significant damage:
  - a. Moderate Potential for Contact. Service workers are in the vicinity of the material at least once each month, but less than once each week or the material is in a room or office and is accessible to the occupants.
  - b. Moderate Potential for Vibration. Motors or engines present but not obtrusive or occasional loud noise in the vicinity of the material.
  - c. Moderate potential for Air Erosion. Noticeable movement of air across or against material, but not high in velocity.
- 3) **Low Potential for Damage.** Material which met one or more of the following conditions and met none of the conditions for potential for significant damage or potential for damage:
  - a. Low Potential for Contact. Service workers are in the vicinity of the material less than once each month or the material is visible but not accessible to the building occupants in the course of normal activity.
  - b. Low Potential for Vibration. None of the conditions for high or moderate potential for vibration are met.
  - c. Low Potential for Air Erosion. None of the conditions for high or moderate potential for air erosion are met.

## 2. Physical Assessment for Thermal ACM.

A. **Condition.** Thermal ACMs were assigned to one of the following categories based on a visual inspection:

- 1) **Significantly Damaged Condition.** Material which met one or both of the following characteristics:
  - a. Missing jackets, crushed, heavily gouged, or punctured insulation on equal to or greater than ten percent (10%) of the material in the functional space, and the damage is evenly distributed.
  - b. Missing jackets, crushed, heavily gouged, or punctured insulation on equal to or greater than twenty-five percent (25%) of the material in the functional space, and the damage is localized.
- 2) **Damaged Condition.** Material which met one or both of the following characteristics:
  - a. Missing jackets, crushed, heavily gouged, or punctured insulation on less than ten percent (10%) of the material in the functional space, and the damage is evenly distributed.
  - b. Missing jackets, crushed, heavily gouged, or punctured insulation on greater than twenty-five percent (25%) of the material in the functional space, and the damage is localized.
- 3) **Good Condition.** Material with very limited, or no visible damage or deterioration.

B. **Potential for Disturbance.** Thermal ACMs were assigned to one of the following categories based on a visual inspection and assessment of surroundings:

- 1) **Potential for Significant Damage.** Material which met one or more of the following conditions:
  - a. High Potential for Contact. Service workers are in the vicinity of the material more than once each week or the material is in a public area and is accessible to building occupants.
  - b. High Potential for Vibration. Loud motors or engines present in the vicinity of the material or there are intrusive noises or easily sensed vibrations from surrounding area, such as a nearby highway or airport.

- c. High Potential for Air Erosion. High velocity air moving across or against the material.
- 2) **Potential for Damage.** Material which met one or more of the following conditions and met none of the conditions for potential for significant damage.
- a. Moderate Potential for Contact. Service workers are in the vicinity of the material at least once each month but less than once each week or the material is in a room or office and is accessible to the occupants.
  - b. Moderate Potential for Vibration. Motors or engines present but not obtrusive or occasional loud noise in the vicinity of the material.
  - c. Moderate Potential for Air Erosion. Noticeable movement of air across or against material, but not high in velocity.
- 3) **Low Potential for Damage.** Material which met one or more of the following conditions and met none of the conditions for potential for significant damage or potential for damage:
- a. Low Potential for Contact. Service workers are in the vicinity of the material less than once per month or the material is visible but not accessible to the building occupants in the course of normal activity.
  - b. Low Potential for Vibration. None of the conditions for high or moderate potential for vibration are met.
  - c. Low Potential for Air Erosion. None of the conditions for high or moderate potential for air erosion are met.

**PHYSICAL ASSESSMENT DATA FOR IDENTIFIED ACM**

**BUILDING:** Charleston Naval Shipyard, Building Number 36

**SAMPLE NUMBER(S):** 31-5-1

**HOMOGENEOUS AREA No.:** 1

**TYPE OF MATERIAL:**                      Surfacing                      TSI                      X Other

Description: Floor Tile, 9" x 9" black w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 14,000 SF

**CONDITION:**

Percent Damage:                      <1 % Damage                      Localized                      Distributed

Type of Damage:                      Deterioration                      Water                      Physical

**DESCRIPTION:**

Overall Rating:                      X Good                      Fair                      Poor

**POTENTIAL FOR DISTURBANCE:**

Frequency of Potential Contact:                      X High                      Moderate                      Low

Description: Material is located in high traffic areas.

Influence of Vibration:                      High                      Moderate                      X Low

Description: None identified.

Potential for Air Erosion:                      High                      Moderate                      X Low

Description: None identified.

**OVERALL RATING:**                      X Potential for                      Potential for                      Low Potential for  
   Significant Damage                      Damage                      Damage

**COMMENTS:** Material should be removed prior to renovation or demolition.

## February 15, 2000



## February 15, 2000

**BUILDING:** Charleston Naval Shipyard, Building Number 36

**HOMOGENEOUS AREA No.:** 5

**Description:** Floor Tile, 12" x 12" lime green with white streaks w/ black mastic

**CONDITION:**

Type of Damage:	Deterioration	Water	Physical
-----------------	---------------	-------	----------

Overall Rating:   X   Good Fair Poor

Frequency of Potential Contact:        X      High                                      Moderate                                      Low

Influence of Vibration:                      High                      Moderate                      X                      Low

Potential for Air Erosion:                      High                      Moderate                      X                      Low

<b>OVERALL RATING:</b>	<u>X</u>	Potential for Significant Damage	Potential for Damage	Low Potential for Damage
------------------------	----------	-------------------------------------	-------------------------	-----------------------------

**BAT Associates, Inc.**

## February 15, 2000

**BUILDING:** Charleston Naval Shipyard, Building Number 36

**HOMOGENEOUS AREA No.: 14**

Description: **Pipe Fitting Insulation, 3" with canvas wrap on domestic water**

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): **375 EA**

**CONDITION:**

Percent Damage:	UNK	% Damage	Localized	Distributed
-----------------	-----	----------	-----------	-------------

Type of Damage:	Deterioration	Water	Physical
-----------------	---------------	-------	----------

**DESCRIPTION:**

Overall Rating: **UNK** Good Fair Poor

**POTENTIAL FOR DISTURBANCE:**

Frequency of Potential Contact:            High                       Moderate                       X Low

**Description:** Material is located in walls.

Influence of Vibration:                  High                  Moderate                  X Low

Description: **None identified.**

Potential for Air Erosion:                  High                  Moderate                  X Low

**Description:** None identified.

<b>OVERALL RATING:</b>	Potential for Significant Damage	Potential for Damage	<u><b>X</b></u> Low Potential for Damage
------------------------	-------------------------------------	-------------------------	---

**COMMENTS:** Material should be removed prior to renovation or demolition.



## 9.0 HAZARD ASSESSMENT OF IDENTIFIED ACM

AHERA describes a hazard assessment as "the means of collecting and considering whatever data were necessary for the management planner to make an informed, responsible recommendation to the LEA [Local Education Agency] consistent with response action requirements". As stated in AHERA, there is no single assessment method that is required in the regulations.

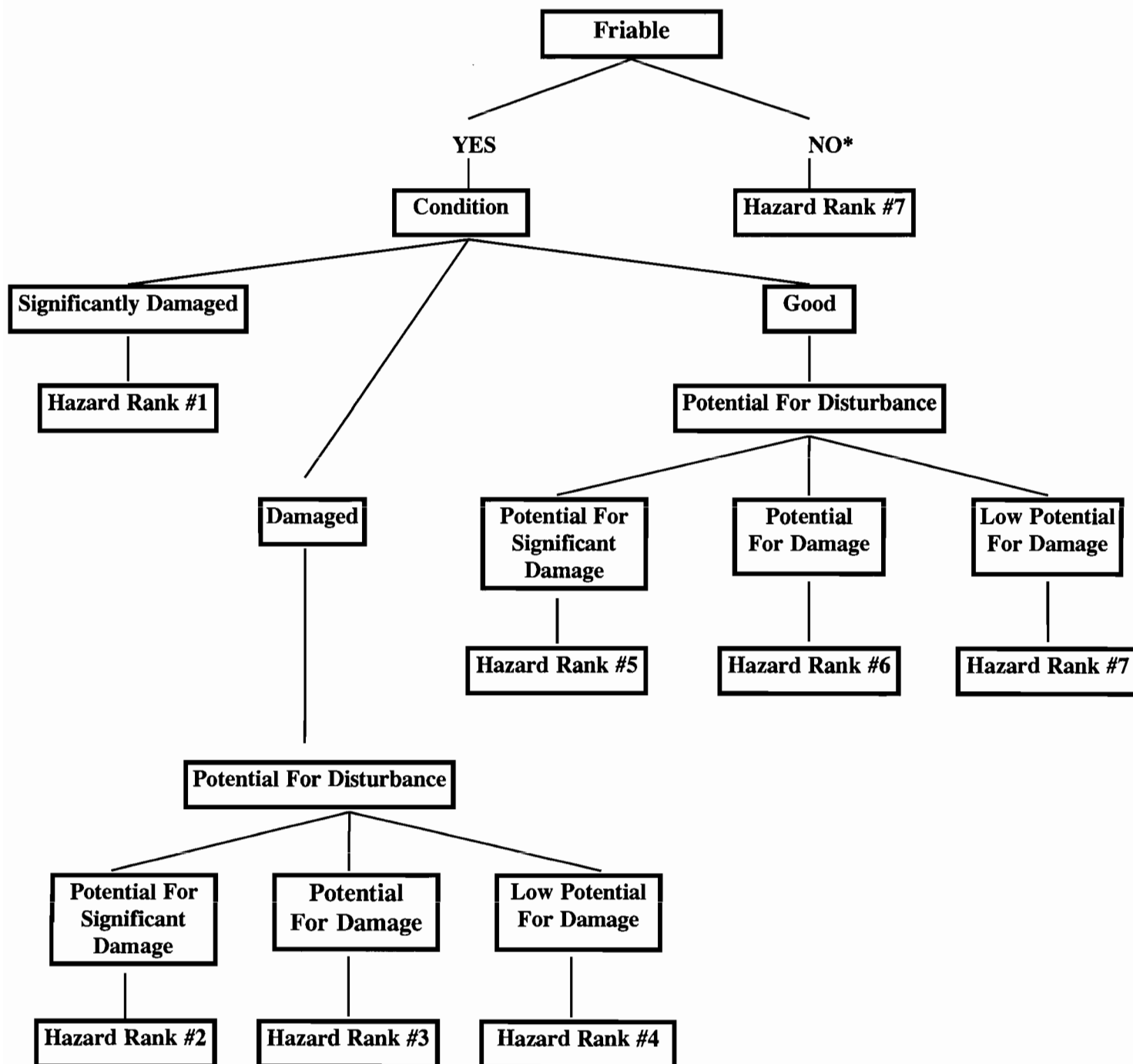
BAT adopted for this re-inspection one of the four general classes of hazard assessment models considered during the AHERA rule-making process. This method for hazard assessment is a modified decision tree as detailed in the USEPA, *Guidance for Assessing and Managing Exposure to Asbestos in Buildings*, or the *Pink Book*. Based on the physical assessment responses documented in the field, the BAT Management Planner proceeded through the decision tree process depicted in Figure 1.0 on the following page.

Only the identified and/or assumed asbestos-containing materials were assessed for hazards.

All of the identified and/or assumed asbestos-containing materials observed in this building were in good condition on the day of the survey.

**Figure 1.0 Decision Tree Diagram For Hazard Assessment**

Hazard rank #1 are materials of highest concern, and hazard rank #7 are the materials least likely to release asbestos fibers to the work area.



\*Miscellaneous materials that are considered non-friable were placed in the Hazard Rank #8 category, which is in good condition with a low potential for damage.





**HAZARD ASSESSMENT AND RESPONSE ACTION DATA  
FOR IDENTIFIED ACM**

**BUILDING:** Charleston Naval Shipyard, Building Number 36

**SAMPLE NUMBER(S):** 31-2-1

**HOMOGENEOUS AREA No.:** 3

**TYPE OF MATERIAL:** Surfacing TSI ☒ Other

**Description:** Floor Tile, 12" x 12" off-white with brown streaks w/ black mastic

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 7,000 SF

**Approximate Recommended Response Action Cost:**

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- (1) Significantly damaged
- (2) Damaged plus potential for significant damage
- (3) Damaged plus potential for damage
- (4) Damaged plus low potential for damage
- (5) ACM (good condition) with potential for significant damage
- (6) ACM (good condition) with potential for damage
- (7) Any remaining friable ACM or friable suspect ACM

- ☒ (1) Removal
- (2) Encapsulation
- (3) Enclosure
- (4) Repair
- (5) Operations and Maintenance Program

☒ (8) Non-friable ACM

**COMMENTS:** Material should be removed prior to renovation or demolition.

**HAZARD ASSESSMENT AND RESPONSE ACTION DATA  
FOR IDENTIFIED ACM**

**BUILDING:** Charleston Naval Shipyard, Building Number 36

**SAMPLE NUMBER(S):** 36-4-1

**HOMOGENEOUS AREA No.:** 4

**TYPE OF MATERIAL:** Surfacing TSI X Other

**Description:** Floor Tile, 12" x 12" beige with gray speckles w/ black mastic

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 7,240 SF

**Approximate Recommended Response Action Cost:**

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |  |
|--|--|
| (1) Significantly damaged                                      | <u>X</u> (1) Removal                   |
| (2) Damaged plus potential for significant damage              | (2) Encapsulation                      |
| (3) Damaged plus potential for damage                          | (3) Enclosure                          |
| (4) Damaged plus low potential for damage                      | (4) Repair                             |
| (5) ACM (good condition) with potential for significant damage | (5) Operations and Maintenance Program |
| (6) ACM (good condition) with potential for damage             |  |
| (7) Any remaining friable ACM or friable suspect ACM           |  |
| <u>X</u> (8) Non-friable ACM                                   |  |

**COMMENTS:** Material should be removed prior to renovation or demolition.







## HAZARD ASSESSMENT AND RESPONSE ACTION DATA FOR IDENTIFIED ACM

**BUILDING:** Charleston Naval Shipyard, Building Number 36

**SAMPLE NUMBER(S):** Exterior Pipe-32

**HOMOGENEOUS AREA No.:** 17

**TYPE OF MATERIAL:** Surfacing ☒ TSI Other

**Description:** Pipe Insulation, 12" with metal wrap

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 160 LF

**Approximate Recommended Response Action Cost:**

### HAZARD ASSESSMENT

- (1) Significantly damaged
- (2) Damaged plus potential for significant damage
- ☒ (3) Damaged plus potential for damage
- (4) Damaged plus low potential for damage
- (5) ACM (good condition) with potential for significant damage
- (6) ACM (good condition) with potential for damage
- (7) Any remaining friable ACM or friable suspect ACM
- (8) Non-friable ACM

### RESPONSE ACTION RECOMMENDATION

- ☒ (1) Removal
- (2) Encapsulation
- (3) Enclosure
- (4) Repair
- (5) Operations and Maintenance Program

**COMMENTS:** Material should be removed prior to renovation or demolition.

## 10.0 PRELIMINARY COST ESTIMATE FOR REMOVAL OF IDENTIFIED ACM

The following is a preliminary cost estimate for the abatement (removal) of identified ACM in Building 36. This estimate is based on removing all of the materials during the same project. It does not include the cost of replacement materials. The cost estimate includes, project surveillance, air monitoring, and disposal of materials. These costs are estimates only; BAT made no attempt to obtain bids from removal contractors for this work, however, the average unit costs of three asbestos abatement contractors were used to develop the preliminary removal costs. Additionally, quantities noted are based upon engineering measurements. BAT recommends the use of architectural measurements for more accurate quantification.

Material Description	Unit Cost (\$)	Quantity	Total Abatement Cost (\$)
Floor Tile (multi-layers) with Mastic	2.78	21,000 SF	58,380
Pipe Insulation (25-30 feet above ground)	5.25	160 LF	840
Pipe Fitting Insulation (including demolition of walls)	32.59	675 EA	21,998
Handling Cost	25.00	134 EA	3,350
Mobilization	300.00	3 EA	900
Waste Disposal Cost	<u>50.00</u>	<u>8 CY</u>	<u>400</u>
Removal Subtotal			85,868
IH Supervision and Monitoring			<u>10,500</u>
Project Subtotal			96,368
Contingency (35%)			<u>33,729</u>
<b>Project Total</b>			<b>130,097</b>

SF = Square Feet    LF = Linear Feet    EA = Each    CY = Cubic Yard

## 11.0 CONCLUSIONS

Inspection of Building 36 and confirmatory laboratory bulk sample analysis of selected samples identified the following materials with asbestos concentrations greater than one percent.

<u>Identified ACM</u>	<u>Quantity</u>	<u>NESHAP Category</u>
Floor Tile, 9" x 9" black w/ black mastic	14,000 SF	Category I, non-friable
Floor Tile, 12" x 12" off-white with brown streaks w/ black mastic	7,000 SF	Category I, non-friable
Floor Tile, 12" x 12" beige with gray speckles w/ black mastic	7,240 SF	Category I, non-friable
Floor Tile, 12" x 12" lime green with white streaks w/ black mastic	7,000 SF	Category I, non-friable
Pipe Fitting Insulation, 3" white with canvas wrap on steam	300 EA	Regulated, friable
Pipe Insulation, 12" with metal wrap	160 LF	Regulated, friable

The following materials were not sampled in order to avoid disrupting their integrity, and they were assumed to contain asbestos:

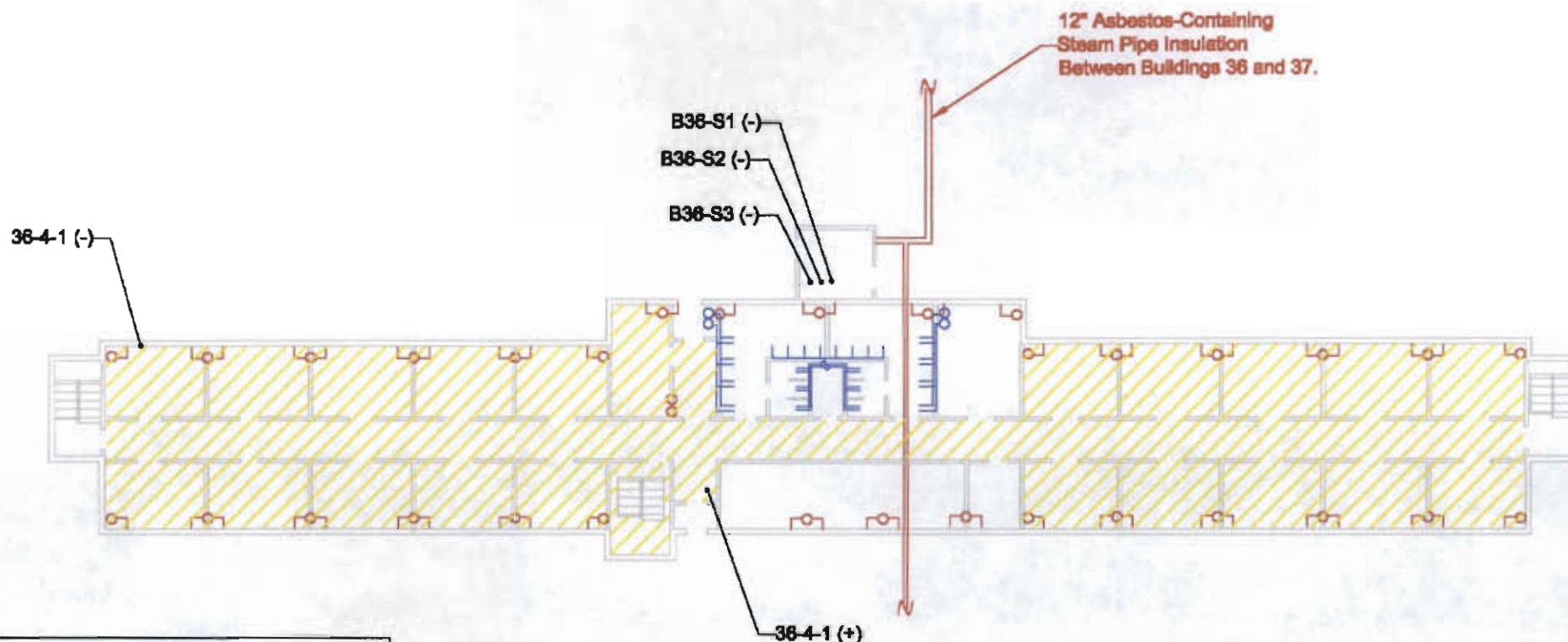
<u>Assumed ACM</u>	<u>Quantity</u>	<u>NESHAP Category</u>
Pipe Fitting Insulation, 3" with canvas wrap on domestic water	375 EA	Regulated, friable

Other suspect ACM not identified could be present in areas of the building inaccessible to the asbestos-building inspectors. For example, material could exist in walls and other locations where access could only be gained by demolition of the building. Also, other materials currently not recognized as ACM by the asbestos building inspection industry could exist.

Rooms that were inaccessible to the asbestos-building inspectors have been identified on the drawings of the building in Appendix B, *Sample and ACM Location Drawings*.

EPA rules governing the application, removal and disposal of ACM were promulgated under NESHAP [40 CFR 61 Part M]. NESHAP requires the building owner or asbestos removal contractor to notify EPA when a building containing ACM is to be renovated, ACM is to be removed, or the building is to be demolished. At least 20 days notification is required "...if less than 260 linear feet of asbestos pipe covering or 160 square feet of asbestos material are removed during building renovation". Ten days notification is required when the amount is greater than 260 linear feet or 160 square feet of friable ACM.



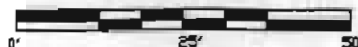


### LEGEND

- - Sample Location
- (-) - Non-Asbestos-Containing Sample Location
- (+) - Asbestos-Containing Sample Location
- Asbestos-Containing Floor Tile and Mastic
- Asbestos-Containing Pipe Fitting Insulation on Riser and Branches to Radiator
- Asbestos-Containing Pipe Fitting Insulation on Domestic Water (Inaccessible in Walls)

## BUILDING 36 FIRST FLOOR

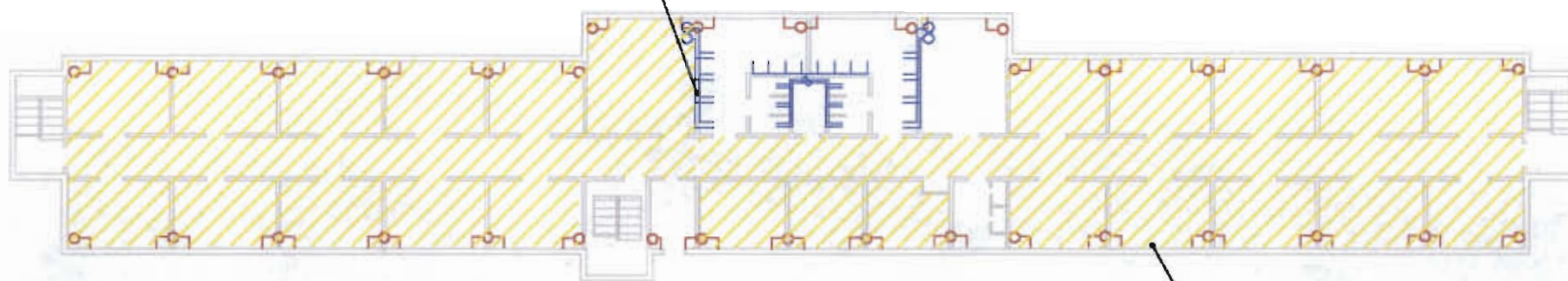
Sample and Asbestos-Containing  
Material Locations



**BAT Associates, Inc.**




ENVIRONMENTAL, HEALTH & SAFETY SERVICES  
5151 BROOK HOLLOW PARKWAY, SUITE 250  
NORCROSS, GA 30071

36-24-1 (-)  
36-24-2 (-)  
36-24-3 (-)



36-4-2 (-)

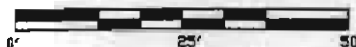
### LEGEND

- - Sample Location
- (-) - Non-Asbestos-Containing Sample Location
-  - Asbestos-Containing Floor Tile and Mastic
-  - Asbestos-Containing Pipe Fitting Insulation on Riser and Branches to Radiator
-  - Asbestos-Containing Pipe Fitting Insulation on Domestic Water (Inaccessible in Walls)

## BUILDING 36

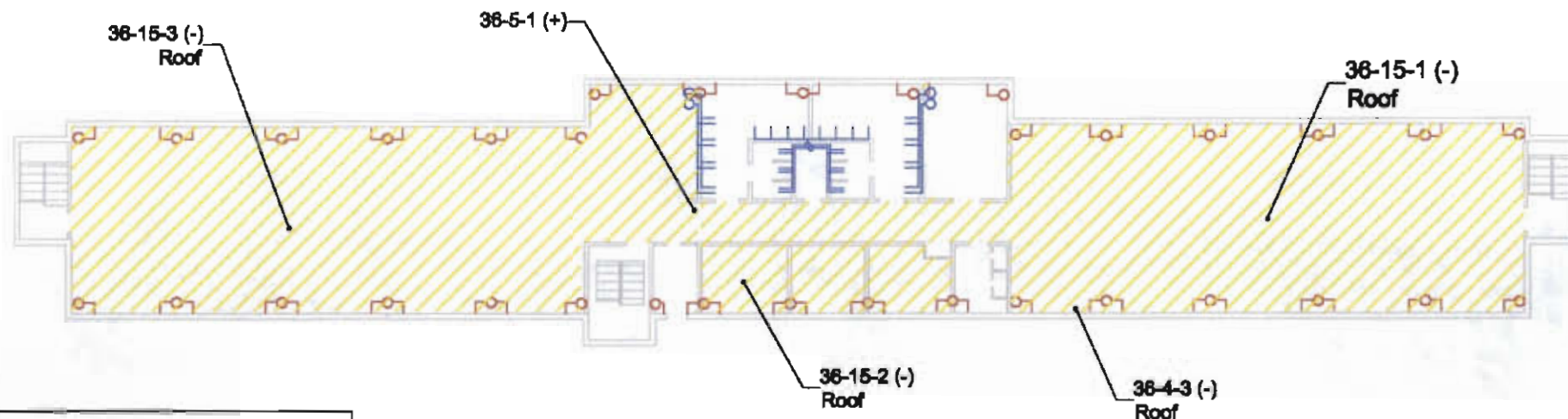
### SECOND FLOOR

Sample and Asbestos-Containing Material Locations



**BAT Associates, Inc.**

ENVIRONMENTAL, HEALTH & SAFETY SERVICES  
5151 BROOK HOLLOW PARKWAY, SUITE 250  
NORCROSS, GA 30071



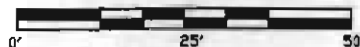
### LEGEND

- - Sample Location
- (-) - Non-Asbestos-Containing Sample Location
- (+) - Asbestos-Containing Sample Location
- Asbestos-Containing Floor Tile and Mastic
- Asbestos-Containing Pipe Fitting Insulation on Riser and Branches to Radiator
- Asbestos-Containing Pipe Fitting Insulation on Domestic Water (Inaccessible in Walls)

## BUILDING 36

### THIRD FLOOR

Sample and Asbestos-Containing  
Material Locations

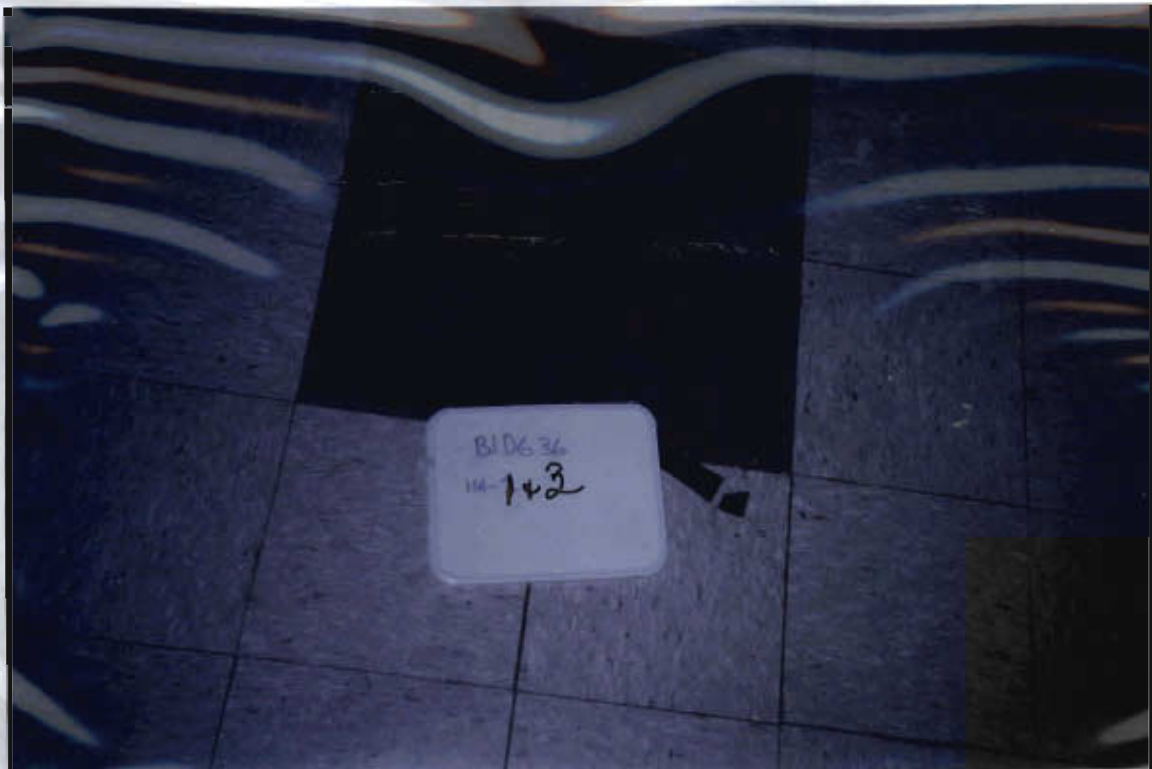


**BAT Associates, Inc.**

ENVIRONMENTAL, HEALTH & SAFETY SERVICES  
5151 BROOK HOLLOW PARKWAY, SUITE 250  
NORCROSS, GA 30071



Floor Tile, 9" x 9" black w/ black mastic, HA # 1



Floor Tile, 12" x 12" off-white with brown streaks w/ black mastic, HA # 3



**Floor Tile, 12" x 12" beige with gray speckles w/ black mastic, HA # 4**



**Floor Tile, 12" x 12" lime green with white streaks w/ black mastic, HA # 5**



**Pipe Fitting Insulation, 3" white with canvas wrap on steam, HA # 13**

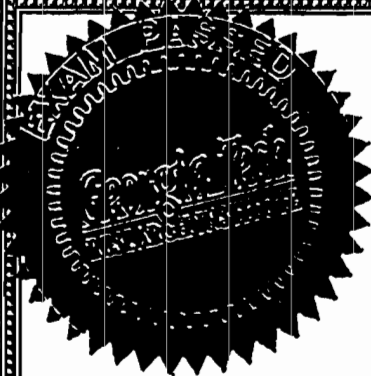
**INACCESSIBLE IN WALLS**

**Pipe Fitting Insulation, 3" with canvas wrap on domestic water, HA # 14**



**Pipe Insulation, 12" with metal wrap, IIA # 17**





# *The Georgia Institute of Technology*

*This is to certify that*

*Foshie Bell*

*has attended an EPA-approved half-day Continuing Education Course entitled:*

***Inspecting Buildings for Asbestos Containing Materials  
(Annual Refresher Course for Building Inspectors)***

*as required by the Federal EPA AHERA Model Accreditation Plan for  
re-accreditation as a Building Inspector for Asbestos (TSCA Title II).*

Georgia Tech Research Institute  
Electro-Optics, Environment and Materials Laboratory  
Atlanta, GA 30332  
Phone: (404) 894-7430; FAX: (404) 894-1267

August 26, 1998

Dates of Attendance

August 26, 1999

Expiration Date

149-64-0385

Social Security Number

*Myrtle I. Turner*  
Myrtle I. Turner, CET  
Course Director  
2900

Certificate Number



# ***The Environmental Institute***

## ***Douglas J. Milton***

Social Security Number - 266-55-7179

*Has completed coursework and satisfactorily passed  
an examination that meets all criteria required for  
EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation  
and NESHAP Regulations Training*

*Asbestos in Buildings: Inspector & Management  
Planner Refresher*

*December 15, 1999*

Course Date

*6398*

Certificate Number

*December 15, 1999*

Examination Date

*December 14, 2000*

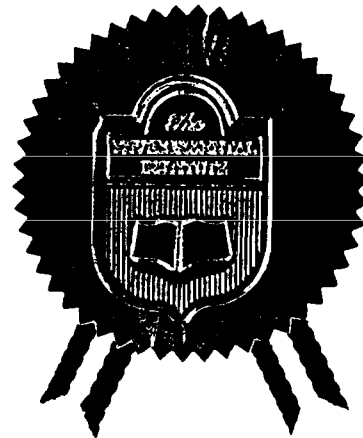
Expiration Date

*Tod A. Dawson*

Tod A. Dawson - Course Director

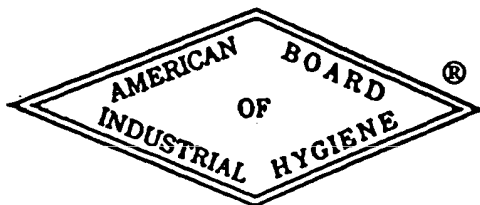
*Rachel G. McCain*

Rachel G. McCain - Exam Administrator



TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The  
American Board of Industrial Hygiene®  
ABIH®



organized to improve the practice of Industrial Hygiene  
proclaims that

***Douglas J. Milton***

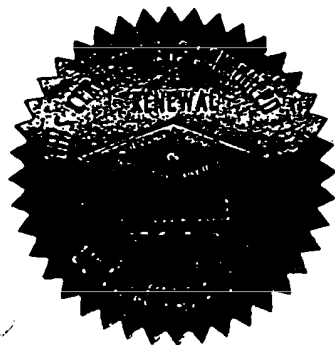
having met all requirements through  
education, experience and examination,  
is hereby certified in the

**COMPREHENSIVE PRACTICE  
of  
INDUSTRIAL HYGIENE**

and has the right to use the designations

**CERTIFIED INDUSTRIAL HYGIENIST**

**CIH**



November 12, 1997

date

*J. Kenneth Connor*  
Chair ABIH

CP 7612

certificate  
number

*Ray T. Connor*  
Secretary ABIH



ASBESTOS ABATEMENT LICENSE

No. 22860

This certifies that

*Douglas I Milton*

266-ORR-7179

doing business as *B A T Associates, Inc*

has satisfactorily completed the training required by South Carolina Regulation No. 61-86.1 and the EPA Model Accreditation Plan, 40 CFR 763 Subpart E Appendix C, for the category of

*Consultant/Management Planner*

The holder of this license shall comply with all the requirements of said Regulation.

This License, License Number, or any Representation thereof, is not transferable to any other licensee or company. Use of this License is only authorized for the licensee and Company whose name appears hereon and shall expire one year from

09/26/98.

The holder of this license is qualified in accordance with requirements of the Asbestos Hazard Emergency Response Act of 1986 (AHERA) to perform as an abatement Building Inspector.

07/28/99

ORIGINAL

07/28/99 14:31



*Richard D. Sharpe*

Richard D. Sharpe, Director  
Air Compliance Management Division  
Bureau of Air Quality  
South Carolina Department of Health & Environmental Control  
CR-001126



ASBESTOS ABATEMENT LICENSE

No. 22859

This certifies that

*Douglas I Milton*

266-BQJ-7179

doing business as *B A T Associates, Inc*

has satisfactorily completed the training required by South Carolina Regulation No. 61-86.1 and the EPA Model Accreditation Plan, 40 CFR 763 Subpart E Appendix C, for the category of

*Consultant/Building Inspector*

The holder of this license shall comply with all the requirements of said Regulation.

This License, License Number, or any Representation thereof, is not transferable to any other licensee or company. Use of this License is only authorized for the licensee and Company whose name appears hereon and shall expire one year from

09/23/98.

07/28/99

ORIGINAL

07/28/99 14:28



*Richard D. Sharpe*

Richard D. Sharpe, Director  
Air Compliance Management Division  
Bureau of Air Quality  
South Carolina Department of Health & Environmental Control  
CR-001126

United States Department of Commerce  
National Institute of Standards and Technology



ISO/IEC GUIDE 25:1990  
ISO 9002:1987

Certificate of Accreditation



ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
ATLANTA, GA

*is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:*

**BULK ASBESTOS FIBER ANALYSIS**

September 30, 2000

Effective through

A handwritten signature, likely of James L. Galt, is written over a horizontal line.

For the National Institute of Standards and Technology

NVLAP Lab Code: 102033-0

United States Department of Commerce  
National Institute of Standards and Technology



ISO/IEC GUIDE 25:1990  
ISO 9002:1987

Certificate of Accreditation



CAPE ENVIRONMENTAL MANAGEMENT, INC.  
ATLANTA, GA

*is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:*

**BULK ASBESTOS FIBER ANALYSIS**

June 30, 2000

Effective through

For the National Institute of Standards and Technology

NVLAP Lab Code: 102111-0

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 31-5-1 LAB ID: 928071  
SAMPLE INFO: DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: BLACK HARD SILTY TO GRANULAR (FT) WITH FIBERS AND BROWN MASTIC

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTILE	7	CELLULOSE		VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS		PERLITE		SAND/AGGR.	20
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	5
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	68

COMMENTS: **2% CHRYSTILE IN MASTIC**


SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST



ALEKSEY REZNIK

QUALITY CONTROL



STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 68 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 32-2-1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3438

Sample Description: Green hard compact partly granular with fibers, glue and paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	1
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	45
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	3
Binders:	50

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 69 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 32-2-2  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3439

Sample Description: Green hard compact partly granular with fibers, glue and paint.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	45
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:	1	Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	3
Animal Hair:		Binders:	50
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.





**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: **B212**  
Page 70 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 32-2-3  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3440

Sample Description: Green hard compact partly granular with fibers, glue and paint.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	45
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:	1	Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	3
Animal Hair:		Binders:	50
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 133 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 31-2-1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3503

Sample Description: Red hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	10
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	1
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	45
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	3
Binders:	40

COMMENTS: Floor tile contains 10% chrysotile. Glue contains 1-2% chrysotile.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: **B212**  
Page 41 of 183 Total Samples  
Thursday, February 10, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 36-4-1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3411

Sample Description: Gray hard compact partly granular with fibers, bitumen and glue.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	3
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	1
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	45
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	3
Resilient Material:	
Glue:	2
Binders:	45

**COMMENTS:** Floor tile contains 3 % chrysotile. Bitumen contains 5 % chrysotile. Glue does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QC Analyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 44 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 36-5-1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3414

Sample Description: Light green hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	5
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	1
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	45
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	2
Resilient Material:	
Glue:	
Binders:	46

COMMENTS: Floor tile contains 5 % chrysotile. Bitumen contains 10 % chrysotile.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: **B212**  
Page 142 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name:	B A T Associates, Inc.	Project Number	971001
Project Name:	Charleston Naval Shipyard	AES Lab ID:	3512
Client Sample ID:	31-10-1		
Location:	Not given		

Sample Description: Gray soft fibrous to perlitic with paint.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	35
Fiberglass:	
Cellulose:	25
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	30
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	10

COMMENTS: Paint included as binder. -

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: **B212**  
Page 143 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name:	B A T Associates, Inc.	Project Number	971001
Project Name:	Charleston Naval Shipyard	AES Lab ID:	3513
Client Sample ID:	31-10-2		
Location:	Not given		

Sample Description: Gray soft fibrous to perlite with paint.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	35
Fiberglass:	
Cellulose:	25
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	30
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	10

COMMENTS: Paint included as binder. -

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 144 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 31-10-3  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3514

Sample Description: Gray soft fibrous to perlitic.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	30
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	35	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	25	Glue:	
Animal Hair:		Binders:	10
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 145 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 31-11-1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3515

Sample Description: Gray soft fibrous to perlitic with paint.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	35
Fiberglass:	
Cellulose:	25
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	30
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	10

COMMENTS: Paint included as binder. -

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QC Analyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.





**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 146 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 31-11-2  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3516

Sample Description: Gray soft fibrous to perlitic with paint.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	35
Fiberglass:	
Cellulose:	25
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	30
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	10

COMMENTS: Paint included as binder. -

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 147 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name:	B A T Associates, Inc.	Project Number	971001
Project Name:	Charleston Naval Shipyard	AES Lab ID:	3517
Client Sample ID:	31-11-3		
Location:	Not given		

Sample Description: Gray soft fibrous to perlitic with paint.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	30
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	35	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	25	Glue:	
Animal Hair:		Binders:	10
Antigorite:			

COMMENTS: Paint included as binder. -

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 181 of 183 Total Samples  
Thursday, February 10, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 34-19-1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3551

Sample Description: Black semi-hard bitumenous to silty with fibers.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	2
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	50
Resilient Material:	
Glue:	
Binders:	47

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 182 of 183 Total Samples  
Thursday, February 10, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 34-19-2  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3552

Sample Description: Black semi-hard bitumenous to silty with fibers.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	2
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	50
Resilient Material:	
Glue:	
Binders:	47

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: **B212**  
Page 183 of 183 Total Samples  
Thursday, February 10, 2000



### BULK SAMPLE ANALYSIS

Client Name:	B A T Associates, Inc.	Project Number	971001
Project Name:	Charleston Naval Shipyard	AES Lab ID:	3553
Client Sample ID:	34-19-3		
Location:	Not given		

Sample Description: Black semi-hard bitumenous to silty with fibers.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	2
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	50
Resilient Material:	
Glue:	
Binders:	47

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 31-6-1 LAB ID: 928074  
SAMPLE INFO: DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOLE		CELLULOSE	30	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS	30	PERLITE	30	SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	10

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 31-6-2 LAB ID: 928075  
SAMPLE INFO: DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOTILE		CELLULOSE	30	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS	30	PERLITE	25	SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	15

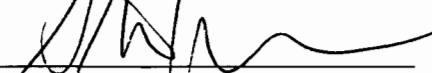
**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 31-6-3 LAB ID: 928076  
SAMPLE INFO: DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOTILE		CELLULOSE	25	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS	25	PERLITE	35	SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	15

**COMMENTS:**

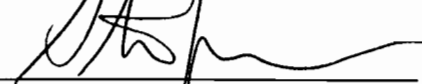
SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00 FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY. REPORT 1 OF 1

ANALYST



ALEKSEY REZNIK

QUALITY CONTROL



STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.



**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 31-7-1 LAB ID: 928077  
SAMPLE INFO: DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO  
APPEARANCE: GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT

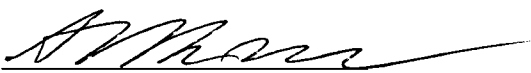
**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTILE		CELLULOSE	35	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS	25	PERLITE	30	SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	10

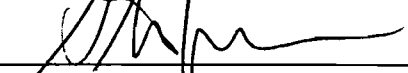
**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00 FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 31-7-2 LAB ID: 928078  
SAMPLE INFO: \_\_\_\_\_ DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO  
APPEARANCE: GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOLE		CELLULOSE	35	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS	25	PERLITE	30	SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	10


**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 31-7-3 LAB ID: 928079  
SAMPLE INFO: \_\_\_\_\_ DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT

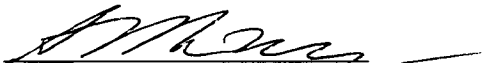
**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOLE		CELLULOSE	30	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS	30	PERLITE	30	SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	10

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00 FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY. REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**CAMP**  
**ENVIRONMENTAL**  
**MANAGEMENT**  
**I N C**

2302 PARKLAKE DRIVE, SUITE 200, ATLANTA, GA 30345  
TEL: (770) 908-7200 FAX: (770) 908-7219

**NVLAP**®

ACCREDITED  
LAB CODE - 102111

**POLARIZED LIGHT MICROSCOPY (PLM)**  
**BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-1  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 36-3-1 LAB ID: 928044  
SAMPLE INFO: DATE ANALYZED: 1/7/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: BLACK SOFT BITUMINOUS TO POWDERY WITH FIBERS

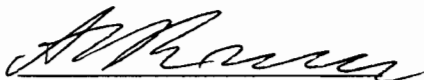
**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOLE		CELLULOSE	2	VERMICULITE/MICA		BITUMEN/TAR	80
AMOSITE		GLASS FIBERS		PERLITE		SAND/AGGR.	3
CROCIDOLITE		SYNTHETICS	2	EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	13

**COMMENTS:**

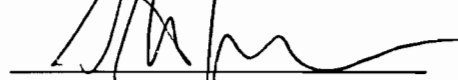
SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/7/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST



ALEKSEY REZNIK

QUALITY CONTROL



STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRAIBLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-1  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 36-3-2 LAB ID: 928045  
SAMPLE INFO: DATE ANALYZED: 1/7/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: BLACK SOFT BITUMINOUS TO POWDERY WITH FIBERS

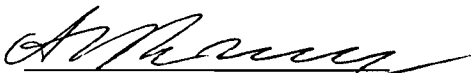
**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTILE		CELLULOSE	2	VERMICULITE/MICA		BITUMEN/TAR	80
AMOSITE		GLASS FIBERS		PERLITE		SAND/AGGR.	3
CROCIDOLITE		SYNTHETICS	3	EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	12

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/7/00 FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST



ALEKSEY REZNIK

QUALITY CONTROL



STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-1  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 36-3-3 LAB ID: 928046  
SAMPLE INFO: DATE ANALYZED: 1/7/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: BLACK SOFT BITUMINOUS TO POWDERY WITH FIBERS

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOLITE		CELLULOSE	2	VERMICULITE/MICA		BITUMEN/TAR	80
AMOSITE		GLASS FIBERS		PERLITE		SAND/AGGR.	2
CROCIDOLITE		SYNTHETICS	3	EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	13

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/7/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-1  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 36-4-1 LAB ID: 928047  
SAMPLE INFO: \_\_\_\_\_ DATE ANALYZED: 1/7/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: GRAY HARD SILTY

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOLITE		CELLULOSE		VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS		PERLITE		SAND/AGGR.	5
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	95

**COMMENTS:**

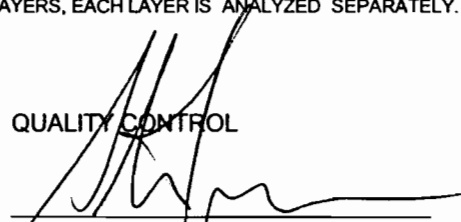
SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92 ) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/7/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST



ALEKSEY REZNIK

QUALITY CONTROL



STEVE JARVIS

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-1  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 36-4-2 LAB ID: 928048  
SAMPLE INFO: \_\_\_\_\_ DATE ANALYZED: 1/7/00

**SAMPLE DESCRIPTION**

LAYERED: NO  
APPEARANCE: GRAY HARD SILTY

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOLE		CELLULOSE		VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS		PERLITE		SAND/AGGR.	7
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	93

**COMMENTS:**


SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/7/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST



ALEKSEY REZNIK

QUALITY CONTROL



STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.



**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-1  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 36-4-3 LAB ID: 928049  
SAMPLE INFO: DATE ANALYZED: 1/7/00

**SAMPLE DESCRIPTION**

LAYERED: NO  
APPEARANCE: GRAY HARD SILTY

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOTILE		CELLULOSE		VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE		GLASS FIBERS		PERLITE		SAND/AGGR.	5
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	95

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/7/00  
FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 33-3-1 LAB ID: 928056  
SAMPLE INFO: DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: WHITE SOFT POWDERY TO FIBROUS WITH CANVAS AND PAINT


**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOTILE	15	CELLULOSE	20	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE	15	GLASS FIBERS		PERLITE		SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	50

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00 FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY. REPORT 1 OF 1

ANALYST



ALEKSEY REZNIK

QUALITY CONTROL



STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
SAMPLE FIELD ID: 33-3-2 LAB ID: 928057  
SAMPLE INFO: DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: WHITE SOFT POWDERY TO FIBROUS WITH CANVAS AND PAINT

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTILE	20	CELLULOSE	20	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE	15	GLASS FIBERS		PERLITE		SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	45

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00 FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY. REPORT 1 OF 1

ANALYST

ALEKSEY REZNIK

QUALITY CONTROL

STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.

**POLARIZED LIGHT MICROSCOPY (PLM)  
BULK SAMPLE ANALYSIS REPORT**

CLIENT NAME: BAT ASSOCIATES LAB JOB NO: B9334-2  
PROJECT NAME: CHARLESTON NSY / 971001-13.03 DATE RECEIVED: 12/16/99  
PROJECT NO: L802Z.000 REPORT ISSUED: 1/13/00  
  
SAMPLE FIELD ID: 33-3-3 LAB ID: 928058  
SAMPLE INFO: \_\_\_\_\_ DATE ANALYZED: 1/10/00

**SAMPLE DESCRIPTION**

LAYERED: NO

APPEARANCE: WHITE SOFT POWDERY TO FIBROUS WITH CANVAS AND PAINT

**RESULT OF ANALYSIS IN VOLUME PERCENTAGE (BY VISUAL ESTIMATE)**

ASBESTOS FIBERS		NONASBESTOS FIBERS		NONFIBROUS COMPONENTS		OTHER COMPONENTS	
CHRYSTOTILE	20	CELLULOSE	15	VERMICULITE/MICA		BITUMEN/TAR	
AMOSITE	20	GLASS FIBERS		PERLITE		SAND/AGGR.	
CROCIDOLITE		SYNTHETICS		EXPANDED GLASS		GLUE/CAULK	
TREMOLITE		WOLLASTONITE		SYNTHETIC FOAM		VINYL	
ACTINOLITE		TALC		ALUMINUM/METAL		CORK	
ANTHOPHYLLITE				FOAM RUBBER		LATEX/RUBBER	
						PAINT/OTHER	45

**COMMENTS:**

SAMPLE WAS ANALYZED BY PLM USING DISPERSION STAINING TECHNIQUES IN ACCORDANCE WITH U.S. EPA METHOD 40CFR Ch. I (7-1-92) PT. 763, SUBPT. F, APP. A. LAST CALIBRATION OF EQUIPMENT WAS PERFORMED ON: 1/10/00 FOR ALL HETEROGENEOUS AND LAYERED SAMPLES EASILY SEPARATED INTO SUBLAYERS, EACH LAYER IS ANALYZED SEPARATELY.  
REPORT 1 OF 1

ANALYST

  
ALEKSEY REZNIK

QUALITY CONTROL

  
STEVE JARVIS

PLM IS NOT CONSISTENTLY RELIABLE IN DETECTING SMALL CONCENTRATION OF ASBESTOS IN FLOOR TILES AND SIMILAR NONFRIABLE MATERIALS. QUANTITATIVE TEM IS CURRENTLY THE ONLY METHOD THAT CAN BE USED TO GET THE CONCLUSIVE ASBESTOS CONTENT. THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, AND NOT WITHOUT WRITTEN APPROVAL OF THE LABORATORY. THIS REPORT SHALL NOT BE USED TO CLAIM ENDORSEMENT BY NVLAP OR ANY AGENCY OF U.S. GOVERNMENT.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 47 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 36-15-1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3417

Sample Description: Layered: 1) Black semi-hard bitumenous; 2) Black semi-hard bitumenous to fibrous; 3) Brown soft fibrous to perlitic.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	5
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	5	Bitumen:	60
Fiberglass:		Resilient Material:	
Cellulose:	30	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 48 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 36-15-2  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3418

Sample Description: Layered: 1) Black semi-hard bitumenous; 2) Black semi-hard bitumenous to fibrous; 3) Brown soft fibrous to perlitic.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	5
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	5	Bitumen:	60
Fiberglass:		Resilient Material:	
Cellulose:	30	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 49 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: 36-15-3  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3419

Sample Description: Layered: 1) Black semi-hard bitumenous with aggregates; 2) Black semi-hard bitumenous to fibrous.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	25
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	10
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	65
Resilient Material:	
Glue:	
Binders:	

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Andrew Pittman

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 23 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: Exterior Pipe - 32  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3393

Sample Description: Layered: 1) Light brown semi-hard fibrous with aluminum; 2) Gray soft powdery to fibrous.

**All percentages given below are visually estimated by volume**

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:	15	Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	5
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	5	Glue:	
Animal Hair:		Binders:	75
Antigorite:			

COMMENTS: Layer #2 contains 15% amosite. Layer #1 does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.





ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 26 of 183 Total Samples  
Wednesday, February 09, 2000

NVLAQ  
Lab # 102082-0

### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: B31-S1  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3396

Sample Description: Layered: 1) Red semi-hard silty to woven; 2) Gray semi-hard silty to fibrous; 3) Light gray semi-hard fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	2	Bitumen:	
Fiberglass:	95	Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	3
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAAnalyst:

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 27 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: B31-S2  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3397

Sample Description: Layered: 1) Red semi-hard silty to woven; 2) Gray semi-hard silty to fibrous; 3) Light gray semi-hard fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	2
Fiberglass:	95
Cellulose:	
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	3

#### COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.  
3125 Marjan Drive  
Atlanta, GA 30340  
Tel: (770) 457-8177  
Fax: (770) 457-8188

AES Job Number: B212  
Page 28 of 183 Total Samples  
Wednesday, February 09, 2000



### BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.  
Project Name: Charleston Naval Shipyard  
Client Sample ID: B31-S3  
Location: Not given  
Project Number: 971001  
AES Lab ID: 3398

Sample Description: Light gray soft powdery to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	5
Mineral Wool:	
Fiberglass:	
Cellulose:	20
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	75

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Svetlana Arkhipov

QCAlyst:

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.

**BAT****BAT Associates, Inc.**

ENVIRONMENTAL, HEALTH &amp; SAFETY SERVICES

5151 Brook Hollow Pkwy., Suite 250

Norcross, GA 30071

Phone: (770) 242-39031

Fax: (770) 242-3912

**CHAIN OF CUSTODY FORM**

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME		Charleston Naval Shipyard	BAT JOB NO. 971001
		TASK NO. 13.03	
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE			
<input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
<input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
SAMPLE ID		SAMPLE ID	
1. 31-2-1		16. 31-12-1	
2. 31-2-2		17. 31-12-2	
3. 31-2-3		18. 31-12-3	
4. 31-5-1		19. 31-13-1	
5. 31-5-2		20. 31-13-2	
6. 31-5-3		21. 31-13-3	
7. 31-9-1		22. 31-16-1	
8.. 31-9-2		23. 31-16-2	
9. 31-9-3		24. 31-16-3	
10. 31-10-1		25.	
11. 31-10-2		26.	
12. 31-10-3		27.	
13. 31-11-1		28.	
14. 31-11-2		29.	
15. 31-11-3		30.	
SPECIAL INSTRUCTIONS: <i>Analyze each homogeneous area till positive</i>			
Relinquished by: <i>John Bell</i>		Received by: <i>Jenny Ross</i>	
Date: <i>1/31/00</i> Time: <i>1:55</i>		Date: <i>FEB 01 2000</i> Time:	

*211/00 NAVY BILL RATE*

## CHAIN OF CUSTODY FORM

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME		Charleston Naval Shipyard	BAT JOB NO. 971001
		TASK NO. 13.03	
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE			
<input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
<input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
SAMPLE ID		SAMPLE ID	
1. Exterior Pipe-32		16. B35-S1	
2. Exterior Pipe-34		17. B35-S2	
3. Exterior Pipe-36		18. B35-S3	
4. B31-S1		19.	
5. B31-S2		20.	
6. B31-S3		21.	
7. B32-S1		22.	
8. B32-S2		23.	
9. B32-S3		24.	
10. B33-S1		25.	
11. B33-S2		26.	
12. B33-S3		27.	
13. B34-S1		233.	
14. B34-S2		29.	
15. B34-S3		30.	
SPECIAL INSTRUCTIONS: <i>Analyze each homogeneous area till positive</i>			
Relinquished by: <i>Joshie Bell</i>		Received by: <i>Jennette Ross</i>	
Date: <i>1/33/00</i> Time: <i>1357</i>		Date: <i>FEB 01 2000</i> Time: _____	

*7/1/00* NAVY BILL note

**BAT****BAT Associates, Inc.****ENVIRONMENTAL, HEALTH & SAFETY SERVICES****5151 Brook Hollow Pkwy., Suite 250****Norcross, GA 30071****Phone: (770) 242-39032****Fax: (770) 242-3912****CHAIN OF CUSTODY FORM**

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME		BAT JOB NO.	TASK NO.
Charleston Naval Shipyard		971001	13.03
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
SAMPLE ID		SAMPLE ID	
1. 32-2-1	16. 32-7-1		
2. 32-2-2	17. 32-7-2		
3. 32-2-3	18. 32-7-3		
4. 32-3-1	19. 32-8-1		
5. 32-3-2	20. 32-8-2		
6. 32-3-3	21. 32-8-3		
7. 32-4-1	22. 32-11-1		
8. 32-4-2	23. 32-11-2		
9. 32-4-3	24. 32-11-3		
10. 32-5-1	25.		
11. 32-5-2	26.		
12. 32-5-3	27.		
13. 32-6-1	28.		
14. 32-6-2	29.		
15. 32-6-3	30.		
SPECIAL INSTRUCTIONS: Analyze each homogeneous area till positive			
Relinquished by: Joshie Bell		Received by: Jennystan Ross	
Date: 1/31/00	Time: 1357	Date: FEB 01 2000	Time:

2/1/00 NAVY BILL RATE

**BAT****BAT Associates, Inc.**

ENVIRONMENTAL, HEALTH &amp; SAFETY SERVICES

5151 Brook Hollow Pkwy., Suite 250

Norcross, GA 30071

Phone: (770) 242-39034

Fax: (770) 242-3912

**CHAIN OF CUSTODY FORM**

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME		Charleston Naval Shipyard	BAT JOB NO. 971001
		TASK NO. 13.03	
ANALYSIS REQUESTED		<input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____	
CHECK ONE:		<input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE	
SAMPLE ID		SAMPLE ID	
1. 33-4-1		16.	
2. 33-4-2		17.	
3. 33-4-3		18.	
4. 33-5-1		19.	
5. 33-5-2		20.	
6. 33-5-3		21.	
7. 33-8-1		22.	
8. 33-8-2		23.	
9. 33-8-3		24.	
10. 33-9-1		25.	
11. 33-9-2		26.	
12. 33-9-3		27.	
13. 33-11-1		28.	
14. 33-11-2		29.	
15. 33-11-3		30.	
SPECIAL INSTRUCTIONS: Analyze each homogeneous area tile positive			
Relinquished by: <i>Foskie Bell</i>		Received by: <i>Jennyfer Ross</i>	
Date: 4/33/00 Time: 1357		Date: FEB 01 2000 Time:	

4/1/00 NAVY BIR rate

**BAT****BAT Associates, Inc.****ENVIRONMENTAL, HEALTH & SAFETY SERVICES****5151 Brook Hollow Pkwy., Suite 250****Norcross, GA 30071****Phone: (770) 242-39034****Fax: (770) 242-3912****CHAIN OF CUSTODY FORM**

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME		Charleston Naval Shipyard	BAT JOB NO. 971001
		TASK NO. 13.03	
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
SAMPLE ID		SAMPLE ID	
1. 34-3-1		16. 34-10-1	
2. 34-3-2		17. 34-10-2	
3. 34-3-3		18. 34-10-3	
4. 34-4-1		19. 34-11-1	
5. 34-4-2		20. 34-11-2	
6. 34-4-3		21. 34-11-3	
7. 34-5-1		22. 34-12-1	
8. 34-5-2		23. 34-12-2	
9. 34-5-3		24. 34-12-3	
10. 34-6-1		25. 34-19-1	
11. 34-6-2		26. 34-19-2	
12. 34-6-3		27. 34-19-3	
13. 34-8-1		28.	
14. 34-8-2		29.	
15. 34-8-3		30.	
SPECIAL INSTRUCTIONS: Analyze each homogeneous area <del>each</del> tie positive			
Relinquished by: <i>Joshua Bell</i>		Received by: <i>Jonny Star Ross</i>	
Date: 1/31/00 Time: 1357		Date: FEB 01 2000 Time:	

211/00 NAVY BILL RATE



# BAT

BAT Associates, Inc.

ENVIRONMENTAL, HEALTH & SAFETY SERVICES

5151 Brook Hollow Pkwy., Suite 250

Norcross, GA 30071

Phone: (770) 242-39034

Fax: (770) 242-3912

## CHAIN OF CUSTODY FORM

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME		Charleston Naval Shipyard	BAT JOB NO. 971001
		TASK NO. 13.03	
ANALYSIS REQUESTED		<input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____	
CHECK ONE:		<input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE	
SAMPLE ID		SAMPLE ID	
1. 36-4-1		16.	
2. 36-4-2		17.	
3. 36-4-3		18.	
4. 36-5-1		19.	
5. 36-5-2		20.	
6. 36-5-3		21.	
7. 36-15-1		22.	
8. 36-15-2		23.	
9. 36-15-3		24.	
10. 36-16-1		25.	
11. 36-16-2		26.	
12. 36-16-3		27.	
13.		28.	
14.		29.	
15.		30.	
SPECIAL INSTRUCTIONS: <i>Analyze each homogeneous area tile positive</i>			
Relinquished by: <i>Joshie Bell</i>		Received by: <i>Jennyfer Ross</i>	
Date: <i>1/33/00</i> Time: <i>1357</i>		Date: <b>FEB 01 2000</b> Time:	

*4/1/00*

*NAVY BILL rate*

**BAT**

**BAT Associates, Inc.**  
**ENVIRONMENTAL, HEALTH & SAFETY SERVICES**

5151 Brook Hollow Pkwy., Suite 250  
 Norcross, GA 30071  
 Phone: (770) 242-3908  
 Fax: (770) 242-3912

**CHAIN OF CUSTODY FORM**

<b>BAT PROJECT CONTACT</b> DOUGLAS J. MILTON	
<b>BAT JOB NAME</b> Charleston Naval Shipyard	<b>BAT JOB NO.</b> 971001 <b>TASK NO.</b> 13.03
<b>ANALYSIS REQUESTED</b> <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____	
<b>CHECK ONE:</b> <input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE	
<b>SAMPLE ID</b>	<b>SAMPLE ID</b>
1. 76-1-1QC	16. 34-4-1QC
2. 76-4-1QC	17. 34-6-1QC
3. 76-8-1QC	18. 34-5-1QC
4. 76-9-1QC	19. 36-4-1QC
5. 76-12-1QC	20. BAT199-2-1QC
6. 76-15-1QC	21. BAT199-1-1QC
7. 76-16-1QC	22. BAT199-4-1QC
8. 76-21-1QC	23. BAT199-5-1QC
9. 76-23-1QC	24. BAT199-7-1QC
10. 31-5-1QC	25. BAT199-10-1QC
11. 31-10-1QC	26. BAT199-17-1QC
12. 32-2-1QC	27.
13. 32-3-1QC	28.
14. 33-5-1QC	29.
15. 34-3-1QC	30.
<b>SPECIAL INSTRUCTIONS:</b> <i>Analysis of the samples in the 3000</i>	
<b>Relinquished by:</b> <i>Joshie Bell</i>	<b>Received by:</b> <i>[Signature]</i>
<b>Date:</b> 12/29/99 <b>Time:</b>	<b>Date:</b> 2/1/00 <b>Time:</b> 2:30

43400 CB  
 2/1/00

**ENVIRONMENTAL  
MANAGEMENT  
I N C**

TEL: (770) 908-7200 FAX: (770) 908-7219

Page 2 of 4

**PLM ANALYSIS ASBESTOS SUMMARY \***

CLIENT NAME: **BAT ASSOCIATES**  
PROJECT NAME: **CHARLESTON NSY / 971001-13.03**

PROJECT NO: 00003.000.000  
LAB JOB NO: B0018

DATE RCVD: 2/1/00

	SAMPLE LAB ID	SAMPLE FIELD ID	LAYER NUMBER	APPEARANCE	LOCATION / DESCRIPTION	% ASBESTOS (COMMENTS)
17	1032	34-4-1QC		BLUE HARD RESILIENT TO GRANULAR WITH BLACK MASTIC		4%CHR (6% CHRYSOTILE IN BLACK MASTIC)
18	1033-1	34-6-1QC	1 (of 2)	RED HARD RESILIENT TO GRANULAR		-
19	1033-2	34-6-1QC	2 (of 2)	BLACK MASTIC WITH FIBERS		7%CHR
20	1034	34-5-1QC		YELLOW HARD RESILIENT TO GRANULAR WITH BLACK MASTIC		5%CHR (7% CHRYSOTILE IN BLACK MASTIC)
21	1035	36-4-1QC		GRAY HARD RESILIENT TO GRANULAR WITH BLACK MASTIC		7%CHR (4% CHRYSOTILE IN BLACK MASTIC)
22	1036	BAT199-2-1QC		PINK HARD RESILIENT TO GRANULAR WITH YELLOW GUMMY MASTIC		-
23	1037	BAT199-1-1QC		BLACK HARD RESILIENT TO GRANULAR WITH FIBERS AND BLACK MASTIC		5%CHR (3% CHRYSOTILE IN BLACK MASTIC)
24	1038	BAT199-4-1QC		GRAY SEMI-HARD RESILIENT WITH BROWN MASTIC		-
25	1039	BAT199-5-1QC		GRAY SEMI-HARD RESILIENT		-
26	1040	BAT199-7-1QC		GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT		-
27	1041	BAT199-10-1QC		BLACK SOFT BITUMINOUS WITH FIBERS AND ALUMINUM FOIL		5%CHR
28	1042	BAT199-17-1QC		GRAY SOFT RESILIENT WITH ALUMINUM FOIL, CANVAS, AND YELLOW FIBERS		-
29	1043-2	1777-3-1QC	2 (of 2)	BLACK SOFT BITUMINOUS WITH FIBERS		3%CHR (SAMPLE NOT ON CHAIN-OF-CUSTODY)
30	1043	1777-1-1QC		NOT RECEIVED		(NOT ANALYZED)
31	1043-1	1777-3-1QC	1 (of 2)	GREEN HARD RESILIENT TO GRANULAR WITH FIBERS		(SAMPLE NOT ON CHAIN-OF- CUSTODY)

\* If box "QC" is not checked, these results are provided before full QC is completed and therefore could be changed.

QC ☐

\* = NO ASBESTOS DETECTED